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EXAMINER
HSU, JONI

ART UNIT	PAPER NUMBER
2676	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	10/750,841	YU, GYEONG-HO
	Examiner	Art Unit	
	Joni Hsu	2676	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-26_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-6, 8, 10, 11, 13, 15, 16, 19, 20, 22-26_ is/are rejected.

7)☒ Claim(s) _1,7-10,12-15,17,18,21 and 22_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
        application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Objections

1.   Claim 1 is objected to because of the following informalities: Claim 1 recites "a first

memory having; an address…" where it should recite "a first memory having: an address…".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and
> distinctly claiming the subject matter which the applicant regards as his invention.

3.   Claims 5, 6, 8, 10, 12, 13, and 22 are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

Claims 5, 8, and 10 recite the limitation "the resolution of the display". There is

insufficient antecedent basis for this limitation in these claims.

Claim 6 recites the limitation "the desired address offset". There is insufficient

antecedent basis for this limitation in the claim.

Claims 12, 13, and 22 recite the limitation "the resolution". There is insufficient

antecedent basis for this limitation in these claims.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign
> country or in public use or on sale in this country, more than one year prior to the date of
> application for patent in the United States.

5.   Claims 1-4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Baldwin

(US005727192A).

6.   With regard to Claim 1, Baldwin describes a memory management apparatus in a video

reproducing system (Col. 4, lines 58-60), wherein input image data having a format is converted

into a suitable format for a display, comprising a scaler (graphics core, Figure 2B) to convert the

format of the input image data (Col. 31, lines 9-10, 55-57); a first memory having an address for

writing (Col. 10, lines 17-18), at which the format-converted image data is written at a data

writing rate (Col. 7, lines 6-11; Col. 21, lines 33-37), and an address for reading (Col. 10, lines

17-18), from which the format-converted image data is read at a data reading rate (Col. 7, lines

6-11; Col. 21, lines 33-37). Baldwin describes double-buffering (Col. 6, lines 14-18; Col. 14,

lines 38-55), so it has a second memory which is substituted for the first memory, wherein the

address for reading does not overlap the address for reading due to a difference between the data

reading rate and the data writing rate (Col. 39, lines 23-35).

7.   With regard to Claim 2, Baldwin describes a memory controller to control reading and writing operations of the first and second memories (Col. 14, lines 5-21).

8.   With regard to Claim 3, Baldwin describes a memory controller to control the substitution of the second memory for the first memory (Col. 26, lines 43-67).

9.   With regard to Claim 4, Baldwin inherently discloses that the memory controller is a microprocessor (Col. 14, lines 5-21; Col. 26, lines 43-67).

10.   With regard to Claim 6, Baldwin describes making sure that the address for reading does not overlap the address for reading due to a difference between the data reading rate and the data writing rate, or the offset (Col. 39, lines 23-35). Therefore, Baldwin describes that the memory controller (Col. 26, lines 43-67) writes the format converted image data, output from the scaler (graphics core, Figure 2B; Col. 31, lines 9-10, 55-57), to the second memory instead of the first memory if a distance between a current address for reading and a current address for writing is within the desired address offset (Col. 6, lines 14-18; Col. 14, lines 38-55; Col. 26, lines 16-19; Col. 39, lines 23-35).

11.   Thus, it reasonably appears that Baldwin describes or discloses every element of Claims 1-4 and 6 and therefore anticipates the claims subject.

Claim Rejections - 35 USC § 103

12.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or
> described as set forth in section 102 of this title, if the differences between the subject
> matter sought to be patented and the prior art are such that the subject matter as a whole
> would have been obvious at the time the invention was made to a person having ordinary
> skill in the art to which said subject matter pertains. Patentability shall not be negatived
> by the manner in which the invention was made.

13.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness
        or nonobviousness.

14.   Claims 5, 11, 16, 19, 20, 23, and 25 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Baldwin (US005727192A) in view of Asaro (US006100906A).

15.   With regard to Claim 5, Baldwin is relied upon for the teachings as discussed above

relative to Claim 3. Baldwin describes that the memory controller calculates a desired address

offset between the address for reading and the address for writing in the first memory (Col. 25,

lines 66-67; Col. 26, lines 16-19).

        However, Baldwin does not explicitly teach that the offset is calculated using the data

reading rate, the data writing rate, and the resolution of the display. However, Asaro describes

calculating an offset for double buffering (Col. 4, lines 57-65) using the data reading rate, the

data writing rate, and the complexity and intricacy of images being displayed, or the resolution

of the display (Col. 1, lines 26-53; Col. 2, lines 6-24).

It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the device of Baldwin so that the offset is calculated using the data reading

rate, the data writing rate, and the resolution of the display as suggested by Asaro because Asaro

suggests that the program must wait for the video graphic circuitry to complete its current

operation, therefore inherently making sure that it does not overwrite data that is still needed

(Col. 2, lines 12-14).

16.   With regard to Claim 11, Baldwin describes a memory management method in a video

reproducing system (Col. 4, lines 58-60) comprising measuring a data writing rate (Mclock) and

a data reading rate (Dclock) of a first memory (Col. 7, lines 6-11; Col. 21, lines 33-37);

determining an offset distance between a current address for writing and a current address for

reading (Col. 26, lines 16-19); and writing image data in a second memory instead of the first

memory if the offset distance is within a predetermined address offset (Col. 6, lines 14-18; Col.

14, lines 38-55; Col. 39, lines 23-35), as discussed in the rejection for Claim 6.

However, Baldwin does not explicitly teach that this method prevents image tearing.

However, Asaro describes a memory management method to prevent image tearing in a video

reproducing system with double buffering comprising measuring refresh rates (Col. 1, lines 26-

53; Col. 2, lines 6-24) and determining offsets (Col. 4, lines 57-65).

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to modify the device of Baldwin so that the method prevents image tearing as suggested by Asaro because Asaro suggests that preventing image tearing prevents a visible separation of images (Col. 1, lines 46-49), therefore resulting in a consistent display.

17.   With regard to Claim 16, Baldwin describes a memory management method in a video reproducing system (Col. 4, lines 58-60) comprising measuring a data writing rate (Mclock) and a data reading rate (Dclock) of a first memory (Col. 7, lines 6-11; Col. 21, lines 33-37); calculating a desired address offset for any data rates including if the data reading rate is faster than the data writing rate (Col. 26, lines 16-19); determining a base address for data reading; determining a relative address for data writing from the base address for data reading (Col. 10, lines 62-67; Col. 12, lines 7-10; Col. 14, lines 10-12; Col. 22, lines 23-25; Col. 26, lines 1-15).

However, Baldwin does not explicitly teach that this method prevents image tearing; comparing the data writing rate to the data reading rate; and determining if a distance between the relative address for data writing and the base address for data reading is greater than or equal to the desired address offset; if the distance is greater than or equal to the desired address offset, continuing the data writing and the data reading in the first memory; and if the distance is within the desired address offset, performing the data writing in a second memory instead of the first memory. However, Asaro describes that this method prevents image tearing (Col. 1, lines 46-49), as discussed in the rejection for Claim 11. Since Asaro describes that this method prevents image tearing, it must also inherently include comparing the data writing rate to the data reading rate. It is well-known that tearing results when video data is input at a rate different than the rate

at which the video is output, and this is found in many publications, such as Nally's patent (US005808629A) (Col. 2, lines 22-25). Therefore, preventing tearing inherently includes comparing the data writing rate to the data reading rate. Asaro also describes writing to the first memory while reading from the second memory, and that the switch to writing to the second memory occurs based on the offset (Col. 4, lines 57-65). Therefore, Asaro inherently discloses determining if a distance between the relative address for data writing and the base address for data reading is greater than or equal to the desired address offset; if the distance is greater than or equal to the desired address offset, continuing the data writing and the data reading in the first memory; and if the distance is within the desired address offset, performing the data writing in a second memory instead of the first memory. This would be obvious for the same reasons given in the rejection for Claim 5.

18.   With regard to Claim 19, Baldwin describes a memory management method in a video reproducing system (Col. 4, lines 58-60) comprising measuring a data writing rate (Mclock) and a data reading rate (Dclock) of a first memory (Col. 7, lines 6-11; Col. 21, lines 33-37); calculating a desired address offset for any data rates including if the data writing rate is faster than the data reading rate (Col. 26, lines 16-19); determining a base address for data writing; determining a relative address for data reading from the base address for data writing (Col. 10, lines 62-67; Col. 12, lines 7-10; Col. 14, lines 10-12; Col. 22, lines 23-25; Col. 26, lines 1-15).

However, Baldwin does not explicitly teach that this method prevents image tearing; comparing the data writing rate to the data reading rate; and determining if a distance between the relative address for data writing and the base address for data reading is greater than or equal

to the desired address offset; if the distance is greater than or equal to the desired address offset,

continuing the data writing and the data reading in the first memory; and if the distance is less

than the desired address offset, performing the data writing in a second memory instead of the

first memory. However, Asaro describes these things, as discussed in the rejection for Claim 16.

19.   With regard to Claim 20, Baldwin discloses that the base address for data writing is

inherently a starting address of the first memory (Col. 10, lines 62-67; Col. 12, lines 7-10; Col.

14, lines 10-12; Col. 22, lines 23-25; Col. 26, lines 1-15).

20.   With regard to Claim 23, Claim 23 is similar in scope to Claim 16, except Claim 23 is for

a computer readable medium on which a program for implementing the method. Baldwin

describes a computer readable medium (Col. 3, line 65-Col. 4, line 4) on which a program for

implementing the method (Col. 6, lines 8-9), and therefore Claim 23 is rejected under the same

rationale.

21.   With regard to Claim 25, Claim 25 is similar in scope to Claim 19, except Claim 25 is for

a computer readable medium on which a program for implementing the method. Baldwin

describes a computer readable medium (Col. 3, line 65-Col. 4, line 4) on which a program for

implementing the method (Col. 6, lines 8-9), and therefore Claim 25 is rejected under the same

rationale.

22.	Claims 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Baldwin (US005727192A) in view of Asaro (US006100906A), further in view of Engstrom

(US005850232A).

23.	With regard to Claim 24, Baldwin and Asaro are relied upon for the teachings as

discussed above relative to Claim 23.

However, Baldwin and Asaro do not teach that the computer readable media is

distributed to a computer system connected through a network and is stored and executed as a

computer readable code in a distributed mode. However, Engstrom describes a computer

readable medium on which a program for implementing a method (Col. 1, lines 35-38) for

managing memory to prevent image tearing in a video reproducing system (Col. 1, lines 52-60)

with double buffering (Col. 15, lines 18-19), and the computer readable media is distributed to a

computer system connected through a network and is stored and executed as a computer readable

code in a distributed mode (Col. 3, line 66-Col. 4, line 2).

It would have been obvious to one of ordinary skill in this art at the time of invention by

applicant to modify the devices of Baldwin and Asaro so that the computer readable media is

distributed to a computer system connected through a network and is stored and executed as a

computer readable code in a distributed mode as suggested by Engstrom because Engstrom

suggests the advantage of being able to communicate with other computers (Col. 3, line 66-Col.

4, line 2).

24.   With regard to Claim 26, Claim 26 is similar in scope to Claim 24, and therefore is

rejected under the same rationale.

Allowable Subject Matter

25.   Claims 7-10, 12-15, 17, 18, 21, and 22 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

26.   Claims 7 and 9 would be allowable if rewritten to overcome the objection set forth in this

Office action and to include all of the limitations of the base claim and any intervening claims.

27.   Claims 8, 10, 13, 15, and 22 would be allowable if rewritten to overcome the rejection(s)

under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the

limitations of the base claim and any intervening claims.

28.   The following is a statement of reasons for the indication of allowable subject matter:

        The prior art taken singly or in combination do not teach or suggest the apparatus and

method wherein if the reading rate (Dclock) is faster than the writing rate (Mclock) in the first

memory, the desired address offset, Address_offset, is calculated using the following:

Address_offset = (a maximum address of the first memory) x (Dclock – Mclock) / Dclock as

recited in claims 7, 14, and 17, including the further limitation of the maximum address of the

first memory being calculated by multiplying the resolution of the display on which image data

are to be displayed by 3, as recited in claims 8, 10, 13, 15, 18, and 22. The prior art also does not

teach the apparatus and method wherein if the writing rate (Mclock) is faster than the reading

rate (Dclock) in the first memory, the desired address offset, Address_offset, is calculated using

the following: Address_offset = (a maximum address of the first memory) x (Mclock – Dclock)

/ Mclock, as recited in claims 9, 12, and 21.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Joni Hsu whose telephone number is 571-272-7785. The

examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matthew C. Bella can be reached on 571-272-7778. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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